

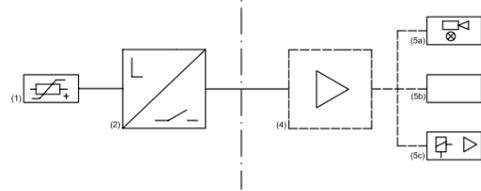
Technical Description:

1 | Structure of the Leak Detection System

The leak detection system consists of a leak probe (IR sensor) and a measurement transformer with binary signal output (relay contact). The signal output is supplied to the alarm device or the control device directly or via a signal amplifier.

The non-tested parts of the leak detection system, such as the signal amplifier (4), alarm device (5a) or control device (5b) and actuator (5c) must correspond to sections 3 and 4 of the permitted basis for overfill safety systems (ZG-US).

1.1 Diagram of the Leak Detection System



- (1) Level recorder
- (2) Measurement transformer
- (4) Signal amplifier
- (5a) Alarm device with horn and lamp
- (5b) Control device
- (5c) Actuator

1.2 Functional Description

The leak probe with measurement transformer and a probe. The measurement transformer consists of a PCB without a case, so that the device is not protected against contact and soiling. The PCB must be installed in a corresponding case with protection of at least IP54. This is a condition for operation. The measurement transformer is supplied via the pluggable terminals with 230 V (AC). Via the measurement transformer, the voltage is transformed to 5V (DC). The probe consists of a sensor (IR transmitter and receiver) that is supplied with the voltage mentioned above, wherein an infrared barrier is built between the transmitter and receiver. The measurement transformer output consists of an isolated relay contact connected to the pluggable terminal connections (3 common, 1 N/C and 2 N/O). Without liquid in the infrared barrier, the relay is not triggered and the green LED indicator lights up. If fluid penetrates into the infrared barrier when there is a leak, the relay is triggered the red LED indicator lights up.

5 | Installation Instructions

5.1 Mechanical Installation of the Leak Probe with Measurement Transformer

Fasten the probe by hanging it onto the monitoring tank. As an installation location, the lowest point of the monitoring tank is to be selected, so that the probe is immersed even if there is a low leakage volume, and triggers the alarm as early as possible. The following points are to be observed:

- Do not attach to places with a high degree of extraneous light (e.g. lights or windows). Protect from directly sunlight with screening walls.
- Do not mechanically load the probe in the area of the end of the probe.
- Do not allow the probe to hang loosely on the alarm but use a cable tension relief. It must be attached securely (e.g. terminal holder for leakage oil probe) to prevent floating or displacement of the probe.
- Do not attach in areas where there is a risk of explosion.
- Do not extend the probe cable.

Connection to the Electrical Mains

LMP Version: the measurement transformer is supplied via the connection for pluggable terminals (4 and 5) with 230V (AV). It is recommended to use cable of Ø 1.5 mm. PE: connect the fastening element to the PCB connection labelled "Ground" with the spade lug.



WARNING!

Mains voltage (230 VAC) in the device. Causes serious burns, may be deadly. Do not bring measurement transformer in contact with water. Do not tamper with the measurement transformer. Only allow electrical work to be carried out by an electrician. Only undertake fitting in closed or protected rooms.



IMPORTANT!

The operating, maintenance and upkeep conditions prescribed in this operating manual must be strictly adhered to.



CAUTION!

The VDE provisions, accident prevention regulations and operating manuals of the oil alarm are to be followed

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1.3 Model Key

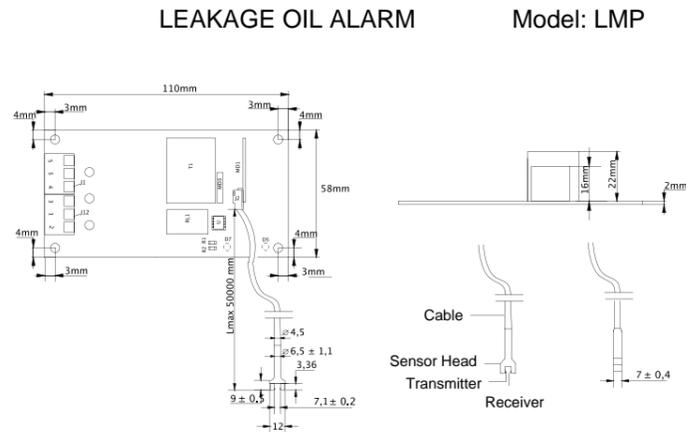
The probe of the leakage oil alarm is manufactured in the standard length of 1.5 m. If not specified, the standard length is supplied. If the desired length deviates from the standard length, this is mentioned (xx = desired length). The maximum possible length of the probe is 50 metres.

LMX XX

Length of the probe
S = Plug case
W = Wall-mounted case
P = Pump version
(without case)

1.4 Dimensional Drawing and Technical Data

1.4.1 Dimensional Drawing of the Level Recorder (with measurement transformer) LMP Version



1.4.2 Technical Data of the Leakage Probe with Measurement Transformer

1.4.2.1 Technical Data of the Probe

Size of the sensor (LxWxH): 12mm x 3.36 mm x 9±0.5mm
 Material of the sensor: fibreglass: FR41.6 mm
 Loctite 438 20G.
 Shrink-on hose HTAT RW-2052 (12/3)
 Cable: line 4 x 0.25 mm
 Standard length of the cable: 1.5 m
 Maximum length of the cable: 50 m
 Material of the cable: Flexible polished electrolyte copper,
 To UNE-EN 60228. Insulation: PVC type T12 and TM2
 Ga AS (Gallium Arsenide)
 Material of the diodes: 50 g.
 Weight in g: IP-55 to EN60529
 Protection: -10°C to +60°C
 Temperature range: infrared sensor (light barrier with sensor)
 Function:

Phototransistor (sensor): silicon
 Diode (sensor): GS AS (Gallium Arsenide)
 Sensor sealant: Loctite 438 20G.
 Shrink-on hose HTAT RW-2052 (12/3)
 Cable: (Flexible polished electrolytic copper, to UNE-EN 60228).
 Insulation: PVC type T11 and TM2
 screw fitting body/cap nut: polyamide 6;
 Seal: neoprene
 PG screw fitting: The PCB must be installed in an appropriate case with a protection of at least IP54 according to EN60529. That is a condition for operation.
 Measurement transformer LMP version has no case:

1.4.2.2 Technical Data of the Operating and Control Board LMP Version

Size (LxWxH): 110mm x 58mm x 24mm
 Material: Copper and fibreglass
 Weight in g: 120 g.
 Input voltage: 230 VAC.
 Max. current consumption: 100 mA
 Min. current consumption: 90 mA
 Output: relay output: max. 230 VAC; max. 5 A; max. 1150 VA
 Signalling: Green LED light - Operation
 Red LED light - Alarm
 Temperature range: -10°C / 40°C
 Type of protection: IP 00 to EN60529
 Electromagnetic compatibility: EN 61000-6-2 and EN 61000-6-3
 Safety & functional testing on electrical measurement and laboratory devices: EN 61010-1
 Emitted interference: EN 61000-6-3
 Interference stabilisation: EN 61000-6-2
 Protection class: EN 60730
 Electrical safety: EN 60730-1

2 | Materials of the Leak Probe and Measurement Transformer

3 | Area of Use

The leakage oil alarm is suitable for use under atmospheric pressure and temperatures of 10 to up to +40°C. The liquids must not have any hardening or adhesive properties in the temperature range mentioned. The liquids must also not tend to crystallise out or form resins.

4 | Fault and Error Message

Dust, dirt, condensate, crystals or anything stuck to the probe may cause an error message. If there is any danger of such soiling, the probes are to be cleaned regularly.

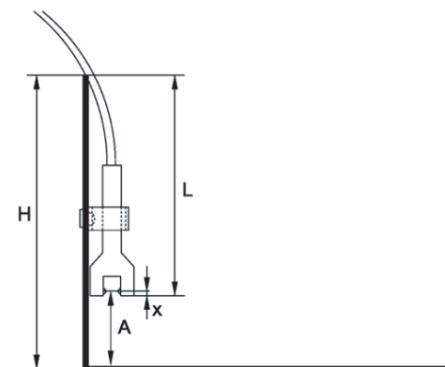
Functioning of the device (signals)

| Level | Input | Output: relay state | LED (green) | LED (red) |
|------------------------|---------|---------------------|-------------|-----------|
| Without leak | 230 VAC | not switched | ON | OFF |
| With leak | 230 VAC | switched | OFF | ON |
| Broken probe | 230 VAC | switched | OFF | ON |
| Without probe | 230 VAC | switched | OFF | ON |
| Without supply | 0 V | not switched | OFF | OFF |
| Short-circuit of probe | 230 VAC | switched | OFF | ON |
| Interruption | 230 VAC | switched | OFF | ON |

To guarantee correct functioning, whenever a liquid has been detected, the sensor must be cleaned and then its functioning is to be checked. For LMW and LMP, a failure of the input voltage is not automatically detected on the output, the input voltage is to be monitored separately.

6 | Adjustment Note

The probe is installed vertically and fitted as follows:



$$L = H - A + X$$

H = Tank height
 A = Activation height
 X = Immersion depth (1mm)
 L = Installation length

To be able to detect a liquid at point A, the probe must be fitted at height L. A should be as small as possible. The probe must therefore be installed as low as possible.

7 | Operating Instruction

- The leakage oil alarms are wear-free when used properly and do not need to be maintained.
- The probe must be cleaned carefully if soiled and always after activating.
- Please always keep the user manual close by the equipment.

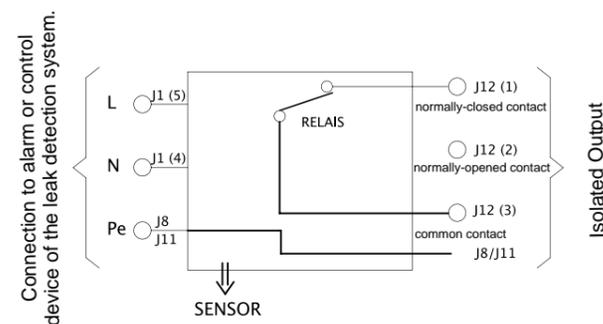
8 | Recurrent Checks

The leak detection system is to be checked at reasonable time intervals, at least once a year, for proper condition and operation. It is the responsibility of the operator to select the type of inspection and the time intervals in the stated period. In so doing, at least the following checks are to be conducted:

- Checking whether, in normal condition, the output voltage is 230 VAC and the green LED light is on.
- The interaction of all the components is to be checked by immersing the probe in the liquid to be monitored. In so doing, check whether the output voltage is 0 V or the output relay switches and the red LED light is on.
- Check whether the probe is correctly fastened
- Check the probe for damage and soiling.

These checks are also to be conducted after each triggering of the leak detection system. After the response, the probe always has to be cleaned. The leak oil alarm is also maintenance free.

5.1 Electrical Diagram of the Leak Probe with Measurement Transformer: LMP Version



5.3 Electrical Connection Diagram of the Leakage Probe with Measurement Transformer: LMP Version

